Reviewer: Breann Hanson **Date:** December 14, 2010
Risk Manager (EPA): BeWanda Alexander, RM Team 13

STUDY TYPE: Acute Oral Toxicity - Rat; OPPTS 870.1100; OECD 401

TEST MATERIAL: Bifenthrin Technical (Bifenthrin: 96%; white powder)

CITATION: Liao, X. (2001) Acute Oral Toxicity Study of Bifenthrin Technical in Rats. Study Number: S010110060; Report Number: 09-PRA-Aceto-043. Unpublished study prepared by Supervision and Test Center for Pesticide Safety Evaluation and Quality Control. May 10, 2001. MRID 47902604.

SPONSOR: Jiangsu Yangnong Chemical Co., Ltd.

EXECUTIVE SUMMARY: In an acute oral toxicity study (MRID 47902604), 5/sex/group young adult rats (age: not reported; weight: 185-224 g males, 187-223 g females; source: Animal Rearing Lab, China Medical University, China; strain: Wistar) were given a single oral dose of Bifenthrin Technical (Bifenthrin: 96%; white powder), administered in corn oil, by gavage at a dose of either 10.0, 21.5, 46.4 or 100.0 mg/kg bw. Individual body weights were recorded prior to dosing (study day 1) and again on study days 3, 7 and 14. The animals were observed for clinical signs of toxicity hourly for the first 6-hours post-dosing and at least twice daily thereafter for the remainder of the 14-day study period. Animals that died during the study period were necropsied.

All animals dosed at 10.0 mg/kg bw and 21.5 mg/kg bw survived, gained body weight and showed no significant signs of toxicity throughout the study period. No necropsies were performed.

One of five male and 3/5 female animals died within 48-hours after being dosed with the test substance at 46.4 mg/kg bw. Survivors gained body weight throughout the study period. No gross internal findings were observed at necropsy for decedents.

All 5 male and 5 female test animals died within 24-hours after being dosed with the test substance at 100.0 mg/kg bw. Clinical signs of toxicity noted prior to death included trembling. No gross internal findings were observed at necropsy for decedents.

Oral LD_{50} Males = 58.4 mg/kg bw (43.0-79.4 mg/kg bw)
Oral LD_{50} Females = 43.0 mg/kg bw (29.5-62.6 mg/kg bw)

Based on the calculated LD_{50} in females (most conservative), Bifenthrin Technical is classified as EPA Toxicity Category I.

This acute oral study is classified as Acceptable. It satisfies the guideline requirement for an acute oral study (OPPTS 870.1100; OECD 401) in the rat. A copy of the original Certificate of Analysis was not included in the study report; inform the registrant that this should be included. According to EPA Test Guidelines for 870.1100, lighting should be artificial, the sequence being 12 hours light and 12 hours dark. According to the study author, lighting was "natural". Also, the ages of the test animals were not reported; although this is a deficiency the body weight ranges provided within the report suggest the animals were of the appropriate age range (8-12 weeks). In addition, according to the Guidelines, all animals should be subjected to gross necropsy. No abnormalities were observed for decedents; therefore this reviewer can reasonably expect that no abnormalities would be observed in animals that survived the study period. These deficiencies should have no effect on the overall acceptability of this study. This reviewer has some concerns regarding the lack of recorded clinical observations within the study report and lack of statistical analysis. NOTE TO PM: Inform the registrant that laboratories should include

detailed recorded clinical observations, most commonly in tabled format, with each study report. As the test substance is in Toxicity Category I based on the information provided by the study report, the lack of the statistical report should have no effect on the overall acceptability of this study.

COMPLIANCE: Signed and dated GLP, Quality Assurance, and Data Confidentiality statements were provided.

RESULTS and DISCUSSION: Individual animals were dosed as follows:

Dose (mg/kg bw)	Mortality/Number Tested		
	Males	Females	Combined
10.0	0/5	0/5	0/10
21.5	0/5	0/5	0/10
46.4	1/5	3/5	4/10
100.0	5/5	5/5	10/10

5/sex/group young adult rats were given a single oral dose of Bifenthrin Technical, administered in corn oil, by gavage at a dose of either 10.0, 21.5, 46.4 or 100.0 mg/kg bw.

Statistics: Statistical analysis was performed by Horn's Method.

A. Mortality: All animals dosed at 10.0 mg/kg bw and 21.5 mg/kg bw survived. One of five male and 3/5 female animals died within 48-hours after being dosed with the test substance at 46.4 mg/kg bw. All 5 male and 5 female test animals died within 24-hours after being dosed with the test substance at 100.0 mg/kg bw.

B. Clinical observations: All surviving animals dosed at 10.0 mg/kg bw, 21.5 mg/kg bw and 46.4 mg/kg bw gained body weight and showed no significant signs of toxicity throughout the study period. Clinical signs of toxicity noted prior to death in animals dosed with the test substance at 100.0 mg/kg bw included trembling.

C. Gross Necropsy: No gross internal findings were observed at necropsy for decedents.

D. Reviewer's Conclusions: This reviewer agrees with the study author's conclusions. Based on the LD_{50} in females, Bifenthrin Technical is classified as EPA Toxicity Category I.

E. Deficiencies: A copy of the original Certificate of Analysis was not included in the study report; inform the registrant that this should be included. According to EPA Test Guidelines for 870.1100, lighting should be artificial, the sequence being 12 hours light and 12 hours dark. According to the study author, lighting was "natural". Also, the ages of the test animals were not reported; although this is a deficiency the body weight ranges provided within the report suggest the animals were of the appropriate age range (8-12 weeks). In addition, according to the Guidelines, all animals should be subjected to gross necropsy. No abnormalities were observed for decedents; therefore this reviewer can reasonably expect that no abnormalities would be observed in animals that survived the study period. These deficiencies should have no effect on the overall acceptability of this study. This reviewer has some concerns regarding the lack of recorded clinical observations within the study report and lack of statistical analysis. Inform the registrant that laboratories should include detailed recorded clinical observations, most

commonly in tabled format, with each study report. As the test substance is in Toxicity Category I based on the information provided by the study report, the lack of the statistical report should have no effect on the overall acceptability of this study.